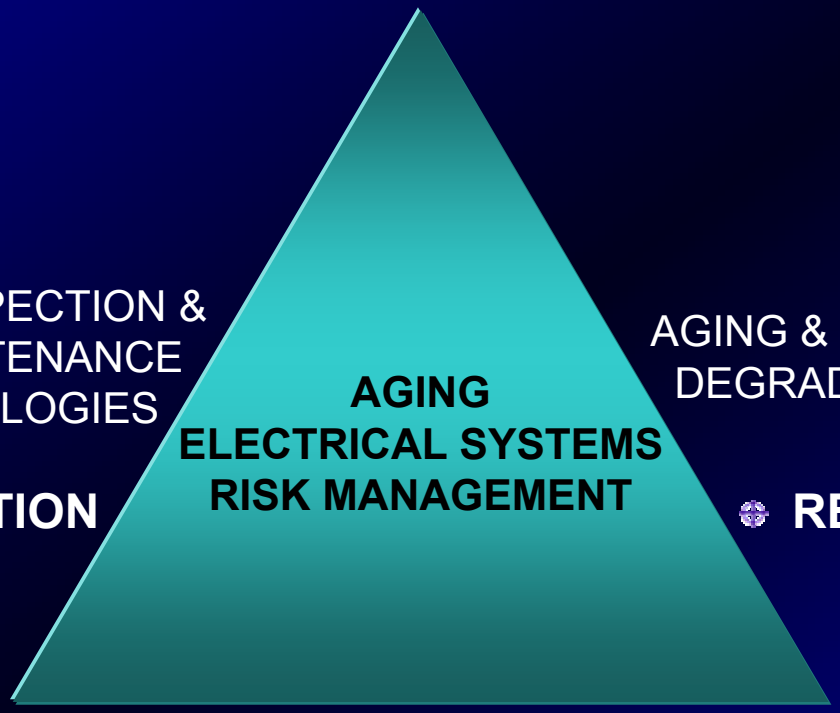
Electrical Wiring Interconnection Systems (EWIS)
Research and Development (R&D)
Technology Transfer HWG

Status Presentation to ATSRAC

22 October 2003

Kent V. Hollinger – US Co-chair



- **HAZARD PREVENTION**
- **RESEARCH & ANALYSIS**
- **HAZARD MITIGATION**

DATE: 22 October 2003

WORKING GROUP / TASK #: 12	**CO-CHAIRS:** Kent Hollinger Vacant

MEMBERS:

NAME	ORGANIZATION	NAME	ORGANIZATION
Rob Pappas	FAA	Petar Glamoclija	Bombardier
Fred Sobeck	FAA	Luci Crittenden (secretary)	NASA
Galen Deeds	Airborne Express	Larry Stevick	Northwest Airlines
Jean-Luc Ballenghien	Airbus	Nicholas Kirincich	Raytheon
Patrick Gombert	Airbus	Dave Allen	SAE
Ken Elias	ALPA	Jean Cartier	Transport Canada
Giday Girmay	Boeing		
Darrel Santala	Boeing	**NOTE:** Need JAA member.	

	DATE	LOCATION
PAST MEETINGS:	2 July 2003	FAA Headquarters @ Washington DC
	16-18 September 2003	FAA AANC NDI Lab @ Albuquerque, NM
FUTURE MEETINGS:	December 2-4, 2003	Raytheon @ Indianapolis, IN
	March 16-18, 2004	Airbus @ Toulouse, France
	June 22-24, 2004	Bombardier @ Montreal, QC
	September 2004	Boeing @ Seattle, WA
	December 2004	FAA Tech Center @ Atlantic City, NJ

OVERVIEW: Identify, review, screen, transfer and implement technologies and knowledge that enhance the safety and continued airworthiness of aircraft EWIS. The scope of this HWG includes procedures, equipment and systems to design, monitor, inspect, test and maintain EWIS.

SUB-TASK#	DESCRIPTION	ESTIMATED COMPLETION DATE	STATUS (RED/GREEN/YELLOW)
12.1 Develop effective strategies to transfer and implement products (including knowledge) resulting from mature R&D efforts.	**A. Aging Circuit Breaker Report**		
	1. Review report DOT/FAA/AR-01/118 and its recommendations.	October 2003	**COMPLETE**
	2. Develop strategy for each appropriate recommendation.	January 2004	**GREEN**
	B. Single Phase Arc Fault Circuit Breaker		
	1. Develop strategy for forward fit.	January 2004	**GREEN**
	2. Develop strategy for retrofit.	July 2004	**GREEN**
	3. Identify operational and maintenance considerations.	July 2004	**GREEN**
	4. Specify advisory materials requiring revision.	July 2004	**GREEN**
	5. Specify necessary operational and maintenance training areas.	July 2004	**GREEN**

SUB-TASK#	DESCRIPTION	ESTIMATED COMPLETION DATE	STATUS (RED/GREEN/YELLOW)
12.2 Review and screen on-going R&D efforts and devise strategies to further develop these products into commercially viable solutions, as appropriate.	**A. Material Characterization Report**		
	1. Review report.	~~October 2003~~ January 2004	YELLOW
	2. Make recommendation for dissemination of information, if appropriate.	~~January 2004~~ April 2004	YELLOW
	B. Excited Dielectric Test		
	1. Schedule to be determined after Navy Critical Design Review.	TBD	YELLOW
	C. Fiber Optical Chafe Detection		
	1. Review report.	April 2004	GREEN
	2. Make recommendation for dissemination of information, if appropriate.	July 2004	GREEN
	D. Wire Indenter		
	1. Review report.	October 2003	COMPLETE
	2. Develop recommendations for enhancements to improve utility for wire inspection.	April 2004	GREEN

SUB-TASK#	DESCRIPTION	ESTIMATED COMPLETION DATE	STATUS (RED/GREEN/YELLOW)
12.2 (continued)	**E. Wire Performance Specification**		
	1. Review report.	January 2004	**GREEN**
	2. Develop recommendations for consideration in the FAA wire performance TSO project.	July 2004	**GREEN**
	F. Maintenance Effects on EWIS		
	1. Review report.	April 2004	**GREEN**
	2. Develop recommendations for enhancements to improve EWIS maintenance practices and non-EWIS practices that impinge upon the EWIS.	January 2005	**GREEN**
	G. Effects of Mixed Wire Types in Aircraft EWIS		
	0. Review preliminary data.	October 2003	**COMPLETE**
	1. Review report.	April 2004	**GREEN**
	2. Develop recommendations regarding mixing of wire types in aircraft EWIS.	January 2005	**GREEN**

SUB-TASK#	DESCRIPTION	ESTIMATED COMPLETION DATE	STATUS (RED/GREEN/YELLOW)
12.2 (continued)	**H. Separation and Segregation in Aircraft EWIS**		
	1. Review preliminary data and status.	January 2004	**GREEN**
	2. Review report.	October 2004	**GREEN**
	3. Develop recommendations regarding separation and segregation of wire and cables in aircraft EWIS.	July 2005	**GREEN**
	I. Broadband Impedance Measurement		
	1. Review report.	October 2004	**GREEN**
	2. Make recommendation for dissemination of information, if appropriate.	January 2005	**GREEN**
	J. Pseudo Random Binary Reflectometry		
	1. Review preliminary data and status.	April 2004	**GREEN**
	2. Review report.	April 2005	**GREEN**
	3. Make recommendation for dissemination of information, if appropriate.	July 2005	**GREEN**

SUB-TASK#	DESCRIPTION	ESTIMATED COMPLETION DATE	STATUS (RED/GREEN/YELLOW)
12.2 (continued)	**K. Pulse Arrested Spark Discharge**		
	1. Review preliminary data and status.	April 2004	**GREEN**
	2. Review report.	July 2005	**GREEN**
	3. Make recommendation for dissemination of information, if appropriate.	October 2005	**GREEN**
	L. Terahertz Reflectometry		
	1. Review report.	October 2004	**GREEN**
	2. Make recommendation for dissemination of information, if appropriate.	January 2005	**GREEN**
	M. Wire Degradation Research		
	1. Review preliminary data and status	April 2004	**GREEN**

SUB-TASK#	DESCRIPTION	ESTIMATED COMPLETION DATE	STATUS (RED/GREEN/YELLOW)
12.3 Explore additional opportunities to promote cooperative efforts and partnerships valuable to achieving EWIS R&D objectives.	**A. Micro Energy High Voltage Wire Tester**		
	1. Identify maintenance personnel to participate in a blind test of the system.	September 2003	**COMPLETE**
	B. Advanced Risk Assessment Techniques for Aircraft EWIS		
	1. Review preliminary data and status.	January 2004	**GREEN**
	2. Identify organizations to participate in reviewing/testing potential techniques.	April 2004	**GREEN**
	3. Provide preliminary tester feedback to FAA.	July 2004	**GREEN**
	C. NOVA Test System		
	1. Identify organizations to participate in reviewing/testing potential techniques.	**CANCELLED**	**COMPLETE (See Recommendation)**
	D. 3-Phase and 28VDC AFCB		
	1. Review preliminary data and status	December 2003	**GREEN**
	2. Review status and make plans.	October 2004	**GREEN**
	E. Identify other opportunities	On-going	**GREEN**

RECOMMENDATION

The FAA should pursue development of an industry standard for a digital description of EWIS routing, termination, and other characteristics for use by NDI test equipment and other potential applications.

Thank You